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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/667,830	09/22/2003	Mats A. Brenner	Honeywell No. H0004501	1008

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EXAMINER	
NGUYEN, TUAN HOANG	

ART UNIT	PAPER NUMBER
2618	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/667,830	BRENNER, MATS A.	
	Examiner	Art Unit	
	TUAN H. NGUYEN	2618	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *10 December 2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-44* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,4-33 and 36-44* is/are rejected.

7)☒ Claim(s) *2,3,34 and 35* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

1. Applicant's argument, see applicant's remarks, filed on 12/10/2007, with respect to the rejection(s) of claims 1-44 under 35 U.S.C § 103(a) have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Yost (U.S PAT. 6,684,061) and Cooper (U.S PAT. 6,611,795).

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 1 and 33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Karabinis et al. (U.S PUB. 2003/0073436 hereinafter, "Karabinis") in view of Yost (U.S PAT. 6,684,061) and further in view of Cooper (U.S PAT. 6,611,795).

Consider claim 1, Karabinis teaches a method of monitoring radio frequency interference (RFI) in a satellite signal, wherein the satellite signal includes a carrier signal (page 14 [0129] and page 17 [0154]).

Karabinis does not explicitly show that calculating a statistical variance estimate (V) based on a plurality (κ) of discriminator values (d_k) formed in a carrier tracking loop.

In the same field of endeavor, Yost teaches calculating a statistical variance estimate (V) based on a plurality (κ) of discriminator values (d_k) formed in a carrier tracking loop (col. 6 lines 26-50).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use, calculating a statistical variance estimate (V) based on a plurality (κ) of discriminator values (d_k) formed in a carrier tracking loop, as taught by Yost, in order for measuring interference reciprocity between uplink and downlink directions in a wireless communications system.

Karabinis and Yost, in combination, fail to teach calculating an RFI detector from the statistical variance estimate.

However, Cooper teaches calculating an RFI detector from the statistical variance estimate (col. 8 line 53 through col. 9 line 17).

Therefore, it is obvious to one of ordinary skill in the art at the time the invention was made to incorporate the disclosing of Cooper into view of Karabinis and Yost, in order to determine the forward error correction parameters are using statistics describing the noise burst duration and period.

Consider claim 33, Karabinis teaches a method of monitoring narrowband and continuous wave RF interference in a system comprising a plurality of satellites transmitting a respective plurality of satellite signals, at least one reference receiver and a ground station, wherein the at least one reference receiver receives the satellite signals from the plurality of satellites (page 14 [0129] and page 17 [0154]).

Karabinis does not explicitly show that forming for each satellite signal, a plurality of discriminator values (d_k) based on processing, in a carrier tracking loop included within one of the at least one of reference receivers, a carrier signal associated with the satellite signal; calculating a statistical variance estimate (V) for each satellite signal based on the plurality (K) of discriminator values (d_k).

In the same field of endeavor, Yost teaches forming for each satellite signal, a plurality of discriminator values (d_k) based on processing, in a carrier tracking loop included within one of the at least one of reference receivers, a carrier signal associated with the satellite signal (col. 6 lines 26-50); calculating a statistical variance estimate (V) for each satellite signal based on the plurality (K) of discriminator values (d_k) (col. 6 lines 26-50).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use, forming for each satellite signal, a plurality of discriminator values (d_k) based on processing, in a carrier tracking loop included within one of the at least one of reference receivers, a carrier signal associated with the satellite signal; calculating a statistical variance estimate (V) for each satellite signal based on the plurality (K) of discriminator values (d_k), as taught by Yost, in order for

measuring interference reciprocity between uplink and downlink directions in a wireless communications system.

Karabinis and Yost, in combination, fail to teach calculating an RFI detector from the statistical variance estimate.

However, Cooper teaches calculating an RFI detector from the statistical variance estimate (col. 8 line 53 through col. 9 line 17).

Therefore, it is obvious to one of ordinary skill in the art at the time the invention was made to incorporate the disclosing of Cooper into view of Karabinis and Yost, in order to determine the forward error correction parameters are using statistics describing the noise burst duration and period.

4. Claims 4-7, 16-17, 26-27, 29-32, 36, and 41-42 are rejected under 35 U.S.C. 103(a) as being unpatentable over Karabinis , Yost and cooper and further in view of Mannermaa Jari (European Patent Application number EP 1 102 415 hereinafter, "Mannermaa").

Consider claim 4, Karabinis , Yost and cooper, in combination, fails to teach the RFI comprises continuous wave RFI.

However, Mannermaa teaches the RFI comprises continuous wave RFI (page 5 lines 5-9).

Therefore, it is obvious to one of ordinary skill in the art at the time the invention was made to incorporate the disclosing of Mannermaa into view of Karabinis, Yost and

cooper, in order to tracking a week and noisy broadcast signal in any spread spectrum signal.

Consider claim 5, Mannermaa further teaches the RFI comprises narrowband RFI (page 5 lines 5-9).

Consider claim 6, Mannermaa further teaches the RFI comprises continuous wave RFI and narrowband RFI (page 5 lines 5-9).

Consider claim 7, Mannermaa further teaches the carrier tracking loop comprises a phase-locked loop (page 5 lines 36-38).

Consider claim 16, Mannermaa further teaches wherein K is 100 (page 5 lines 42-45).

Consider claim 17, Mannermaa further teaches each of the plurality of the discriminator values is formed from in-phase and quadrature-phase components of the satellite signal (page 6 lines 23-29).

Consider claim 26, Mannermaa further teaches the carrier tracking loop is implemented in a receiver (page 5 lines 29-36).

Consider claim 27, Mannermaa further teaches the receiver comprises a plurality of tracking channels, each tracking channel for tracking one satellite signal, and wherein the RFI detector is calculated for each of the plurality of tracking channels (page 5 lines 29-49).

Consider claim 29, Mannermaa further teaches machine language instructions stored on a machine-readable medium (page 6 lines 43-44).

Consider claim 30, Mannermaa further teaches the machine-readable medium is a data storage element readable by a microprocessor (page 6 lines 43-44).

Consider claim 31, Mannermaa further teaches the RFI is present in a pass band of the carrier signal (page 2 lines 36-39).

Consider claim 32, Mannermaa further teaches the RFI is present in a pass band of the carrier tracking loop (page 2 lines 40-45).

Consider claim 36, Mannermaa further teaches the step of calculating the RFI detector is carried out in the at least one reference receiver (page 6 lines 20-24).

Consider claim 41, Mannermaa further teaches the step of calculating the RFI detector is carried out in the ground station (page 4 lines 14-19).

Consider claim 42, Mannermaa further teaches storing the RFI detector in a data storage element of the ground station (page 4 lines 14-19); and quantifying the levels of the CW and the narrowband RF interference present in the ground station by evaluating a time history of the RFI detector over the plurality of satellites (page 7 lines 6-11).

5. Claims 37-40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Karabinis , Yost, cooper and Mannermaa and further in view of Lomp et al. (U.S PAT. 5,799,010 hereinafter, "Lomp").

Consider claim 37, Karabinis , Yost, cooper, and Mannermaa in combination, fails to teach the RFI comprises continuous wave RFI.

However, Lomp teaches the RFI comprises continuous wave RFI (page 5 lines 5-9).

Therefore, it is obvious to one of ordinary skill in the art at the time the invention was made to incorporate the disclosing of Lomp into view of Karabinis, Yost, cooper, and Mannermaa, in order to provide a multiple access, spread-spectrum communication system processes a plurality of information signals received by a Radio Carrier Station over telecommunication lines for simultaneous transmission over a radio frequency channel as a code-division-multiplexed signal to a group of Subscriber Units.

Consider claim 38, Lomp further teaches the ground station compares the RFI detector to a threshold value and excludes the pseudorange from the differential calculations if the RFI detector exceeds the threshold value (col. 52 lines 57-63).

Consider claim 39, Lomp further teaches the threshold value is indicative of a loss of lock of the carrier tracking loop of the at least one reference receiver (col. 2 lines 57-63).

Consider claim 40, Lomp further teaches the threshold value is indicative of a cycle slip of the carrier tracking loop of the at least one reference receiver (col. 52 lines 57-63).

6. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yost in view of Cooper and Mannermaa and further in view of Horslund et al. (US PAT. 5,983,160 hereinafter, "Horslund").

Consider claim 8, Yost, Cooper and Mannermaa, in combination, fails to teaches the phase-locked loop is a Costas loop.

However, Horslund teaches the phase-locked loop is a Costas loop (col. 1 lines 38-49).

Therefore, it is obvious to one of ordinary skill in the art at the time the invention was made to incorporate the disclosing of Horslund into view of Yost, Cooper and Mannermaa, in order to provide a system and method for increasing jamming immunity in a GPS/INS system.

7. Claims 9-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yost in view of Cooper and further in view of Horslund et al. (US PAT. 5,983,160 hereinafter, "Horslund").

Consider claim 9, Yost and Cooper, in combination, fails to teach a method of monitoring radio frequency interference (RFI) in a satellite signal.

However, Horslund teaches a method of monitoring radio frequency interference (RFI) in a satellite signal (col. 8 lines 27-48).

Therefore, it is obvious to one of ordinary skill in the art at the time the invention was made to incorporate the disclosing of Horslund into view of Yost and Cooper, in order to provide a system and method for increasing jamming immunity in a GPS/INS system.

Consider claim 10, Horslund further teaches the carrier tracking loop comprises a phase locked loop and a frequency-locked loop (col. 8 line 27 through col. 9 line 14).

Consider claim 11, Horslund further teaches the carrier tracking loop has a first mode of operation and a second mode of operation, wherein the first mode of operation is a phase-locked operation and the second mode of operation is a frequency locked operation, and wherein a first RFI detector is formed when the loop operates in the first mode and a second RFI detector is formed when the loop operates in the second mode (col. 8 line 27 through col. 9 line 14).

8. Claims 12-15 and 18-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yost in view of Cooper and further in view of Lomp et al. (US PAT. 5,799,010 hereinafter, "Lomp").

Consider claim 12, Yost and Cooper, in combination, fails to teach the RFI detector is defined as a root-mean-square (RMS) of the discriminator value.

However, Lomp teaches the RFI detector is defined as a root-mean-square (RMS) of the discriminator value (col. 51 lines 32-33).

Therefore, it is obvious to one of ordinary skill in the art at the time the invention was made to incorporate the disclosing of Lomp into view of Yost and Cooper, in order to process a plurality of information signals received by a Radio Carrier Station over telecommunication lines for simultaneous transmission over a radio frequency channel as a code-division-multiplexed signal to a group of Subscriber Units.

Consider claim 13, Lomp further teaches the RFI detector is derived from a square root value of the statistical variance estimate (col. 51 lines 32-33).

Consider claim 14, Lomp further teaches each of the plurality of the discriminator values is formed at a periodic interval (col. 28 lines 9-16).

Consider claim 15, Lomp further teaches the periodic interval is 0.01 seconds (col. 28 lines 31-33).

Consider claim 18, Lomp further teaches determining whether a loss of lock of the carrier tracking loop has occurred by determining whether the RFI detector exceeds a threshold value (col. 52 lines 57-63).

Consider claims 19 and 23, Lomp further teaches the threshold value is determined by simulating a response of the carrier tracking loop to CW and narrowband RFI (col. 44 line 55 through col. 45 line 3).

Consider claim 20 and 24, Lomp further teaches the threshold value is 0.6 radians (col. 49 lines 54-61).

Consider claim 21 and 25, Lomp further teaches the threshold value is adjusted based on a signal-to-noise ratio of the satellite signal (col. 65 lines 46-60).

Consider claim 22, Lomp further teaches determining whether a cycle slip of the carrier tracking loop has occurred by determining whether the RFI detector exceeds a threshold value (col. 52 lines 57-63).

9. Claims 28 and 43 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yost in view of Cooper and further in view of applicant admitted prior art.

Consider claim 28, Yost and Cooper, in combination, fails to teach the satellite signal is selected from the group consisting of a GPS, GLONASS, Galileo, WAAS, and EGNOS signal.

However, applicant admitted prior art teaches the satellite signal is selected from the group consisting of a GPS, GLONASS, Galileo, WAAS, and EGNOS signal (page 3 lines 7-9).

Therefore, it is obvious to one of ordinary skill in the art at the time the invention was made to incorporate the disclosing of applicant admitted prior art into view of Yost and Cooper, in order to monitoring and detecting continuous wave and narrowband radio frequency interference in a satellite signal pass band.

Consider claim 43, Yost and Cooper, in combination, fails to teaches the system is selected from the group consisting of LAAS, WAAS, and EGNOS.

However, applicant admitted prior art teaches the system is selected from the group consisting of LAAS, WAAS, and EGNOS (page 4 lines 14-19).

Therefore, it is obvious to one of ordinary skill in the art at the time the invention was made to incorporate the disclosing of applicant admitted prior art into view of Yost and Cooper, in order to monitoring and detecting continuous wave and narrowband radio frequency interference in a satellite signal pass band.

10. Claim 44 is rejected under 35 U.S.C. 103(a) as being unpatentable over Karabinis in view of Yost.

Consider claim 44, Karabinis teaches a method for monitoring continuous wave and narrowband interference in a pass band of a satellite carrier signal, the method comprising in combination: means for estimating a statistical variance among a plurality of discriminator values formed in a tracking loop (page 14 [0129] and page 17 [0154]).

Karabinis does not explicitly show that the tracking loop tracks the satellite carrier signal; means for calculating a standard deviation value from the statistical variance estimate; means for comparing the standard deviation value to a threshold value; and means for detecting an RFI fault when the standard deviation value exceeds the threshold value.

In the same field of endeavor, Yost teaches the tracking loop tracks the satellite carrier signal (col. 6 lines 26-50); means for calculating a standard deviation value from the statistical variance estimate (col. 4 lines 44-63); means for comparing the standard

deviation value to a threshold value (col. 4 lines 44-63 and col. 5 lines 23-38); and means for detecting an RFI fault when the standard deviation value exceeds the threshold value (col. 6 lines 26-50).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use, the tracking loop tracks the satellite carrier signal; means for calculating a standard deviation value from the statistical variance estimate; means for comparing the standard deviation value to a threshold value; and means for detecting an RFI fault when the standard deviation value exceeds the threshold value, as taught by Yost, in order for measuring interference reciprocity between uplink and downlink directions in a wireless communications system.

Allowable Subject Matter

11. Claims 2-3 and 34-35 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

12. Any response to this action should be mailed to:

Mail Stop_____ (Explanation, e.g., Amendment or After-final, etc.)

Commissioner for Patents

P.O. Box 1450

Alexandria, VA 22313-1450

Facsimile responses should be faxed to:

(571) 273-8300

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401 Dulany Street

Alexandria, VA 22313

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tuan H. Nguyen whose telephone number is (571)272-8329. The examiner can normally be reached on 8:00Am - 5:00Pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Maung Nay A. can be reached on (571)272-7882882. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Information Consider the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Tuan Nguyen
Examiner
Art Unit 2618

/Nay A. Maung/
Supervisory Patent Examiner, Art Unit 2618